Jetstream 31 (J31) Flight Report for INTEX-B/MILAGRO
Flight VER11 flown 17 Mar 2006

A complete version of this report is posted at
http://www.espo.nasa.gov/intex-b/flightplanningJ31.cgi

Overview
Preflight goals focused on underflying Aqua over the Gulf to study aerosols or clouds depending on conditions encountered.
See planned and actual flight tracks in Figures 1 and 2.

Engine on: 1805 UT
Engine off: 2148 UT

Takeoff: 1835 UT
Land: 2143 UT

2004 UT Aqua overpass.

Cabin crew: Arnold, Cumbane, Knobelspiesse, Livingston (flight scientist), Schmidt (deputy for clouds), Wacquet.

Pilot Summary
Went well except, in beginning, system test required going out to wing for manual test. No safety issues. Takeoff delayed by ~8-10 min by delayed turn-on of cabin sensor power.

Discussion of flight
Flight Scientist: Somewhat successful flight. Adjusted location due to cirrus, SE of planned point. Got Ci-free meas in spiral down—very nice profile, AOD=0.18 at bottom, then leg at 200 ft. 3 layers in profile, 0.7, 1.5, 2.3 km. Ascent after transect, but Ci had moved in, so ran fig 4 transect in original direction. Completed leg in principal plane, then cross plane, during Aqua overpass. Went to ENE for CAR maneuvers in mostly clear region, 2,000 ft.

Found beautiful cloud deck (solid stratocumulus?), did run just above, did run below, matching track above, 98% overcast. After that, some data under scattered cloud (suitable for Coakley objective?).

Part of run back was at 14,500 ft. Checked AOD spectrum for window dirt. Ci during profile down at VER.

Special thanks to all involved in flight planning & on board for excellent collaboration.

Deputy Flight Scientist: Great flight. Significant AOD even though not in MC outflow.

POS display is big help to flight scientist. Suggestion: Person at POS display should be flight scientist. In future expts would be good to have more than 1 POS display.

Instrument Performance & Status

AATS: No problems.

CAR: Glitch on takeoff w computer. Got past that. Will shut down before landing in future.

RSP: No problems. Nice to have 2 people on flight, because of need for 1 to work Vanderlei's spreadsheet and improvise in flight. Data look good.

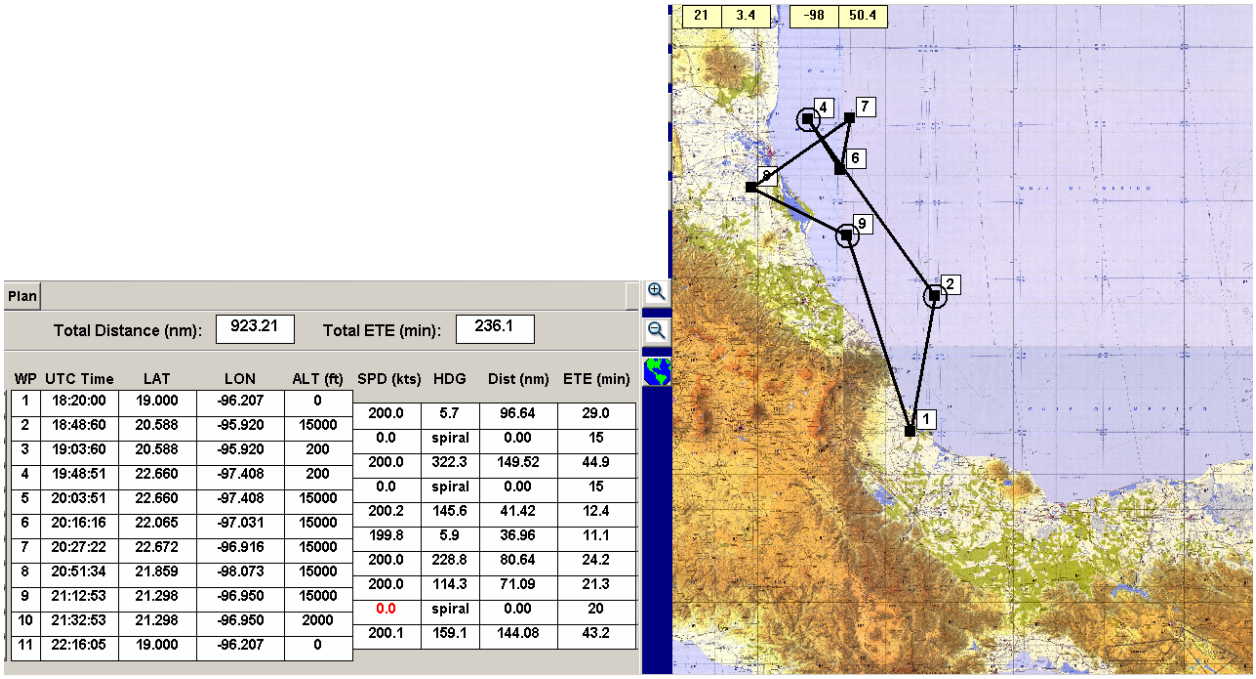
SSFR: Worked fine.

POS: Fine.

NavMet: Looked good.

Flight Path, Timing, and Measurements (all times UT [VER local +6])

1824 AATS darks
1827 AATS unparked & taking data before taxi, AOD(520 nm)~0.15, CWV 4.1 cm
1837 Takeoff, scattered Ci
1845 Distinct haze layer below all around. ZGPS=2.7 km, AOD(520)=0.02
1857 Still scattered Ci, another layer above low layer of aerosol.
Found hole above around 20 deg 20' 20", 96 deg 17' 30"
1920 Still in spiral descent
1929 200 ft, under low clouds. Zhaze layers from spiral: 0.7, 1.5, 2.5 km? AOD(520)~0.18
1930 AOD(520)~0.18
1931 Begin ascent. Altitude of low clouds ~500-600 m?
2004 Beginning perpendicular leg
2006 Crossing the track
2010 A little Ci. Terminating perpendicular run heading to do CAR measurements.
2023 Ramping down to 2000 ft for CAR maneuvers in clear, then will attempt above/below cloud street (Kirk taking a picture)
2035 to 2047: CAR maneuver at 2000 ft. AOD(520) ~0.09. Very scattered stratus below.
2049 Starting transit above cloud layer at ZGPS=745 m.
2051 Heading 330 deg, now begin cloud run over 98% overcast stratocumulus
2056 Flew thru wisp of cloud on descent below cloud.
2058 Under cloud flying 158 deg heading, back along same track
AATS lost tracking during horizontal transect under cloud.
2105 Good AATS AOD measurements for short period at 300 ft
2110 Begin ramp up to ~14,000 ft heading back to VER
2118 4.3 km, AOD(520)~0.018. On outbound leg, AOD(520) ~0.010 for same altitude, but later in the flight ~0.013.



WP	UTC Time	LAT	LON	ALT (ft)	SPD (kts)	HDG	Dist (nm)	ETE (min)
1	18:20:00	19.000	-96.207	0				
2	18:48:60	20.588	-95.920	15000	200.0	5.7	96.64	29.0
3	19:03:60	20.588	-95.920	200	0.0	spiral	0.00	15
4	19:48:51	22.660	-97.408	200	200.0	322.3	149.52	44.9
5	20:03:51	22.660	-97.408	15000	0.0	spiral	0.00	15
6	20:16:16	22.065	-97.031	15000	200.2	145.6	41.42	12.4
7	20:27:22	22.672	-96.916	15000	199.8	5.9	36.96	11.1
8	20:51:34	21.859	-98.073	15000	200.0	228.8	80.64	24.2
9	21:12:53	21.298	-96.950	15000	200.0	114.3	71.09	21.3
10	21:32:53	21.298	-96.950	2000	0.0	spiral	0.00	20
11	22:16:05	19.000	-96.207	0	200.1	159.1	144.08	43.2

Figure 1. Planned flight track, J31 Flight 11, 17 March 2006.

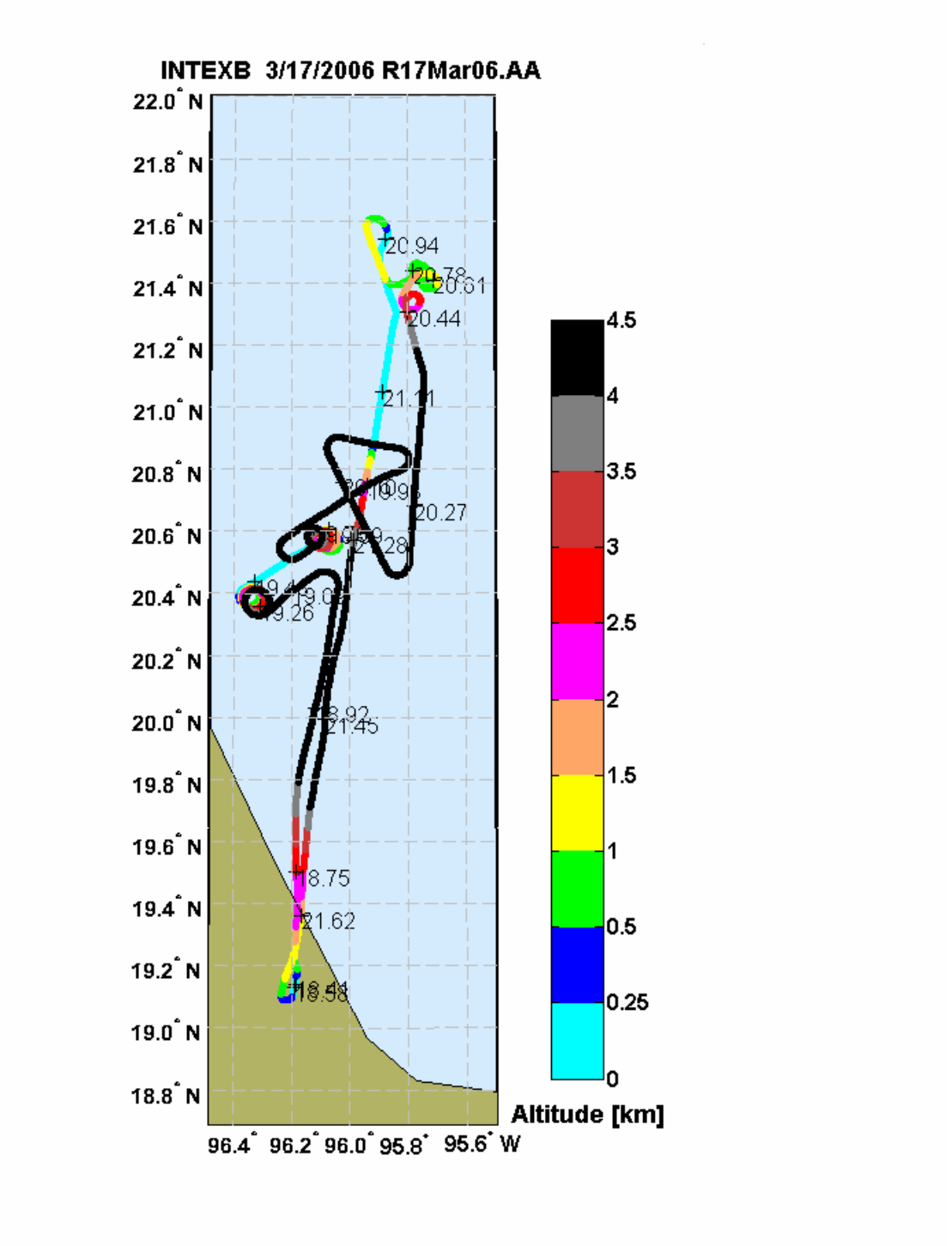


Figure 2. Actual flight track, J31 Flight VER11, flown 17 March 2006.

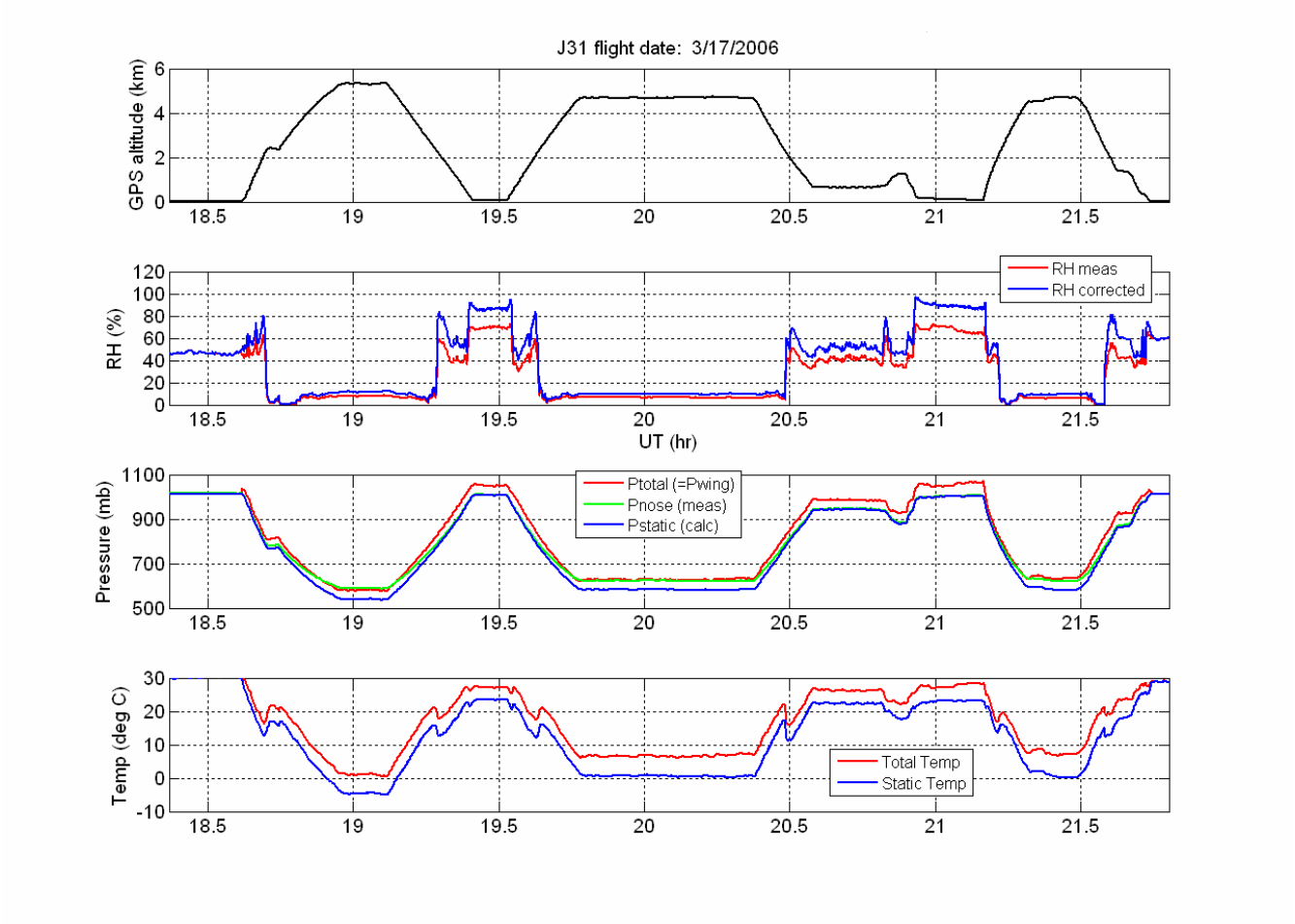


Figure 3. NavMet data, J31 Flight VER11, 17 March 2006.